

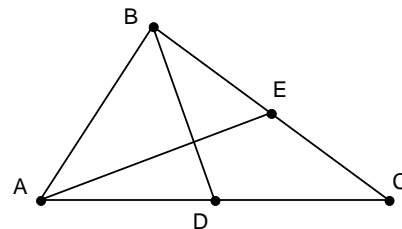
Centroid - Intersection of Medians

1. Find the midpoint, E, of BC using $MP = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$

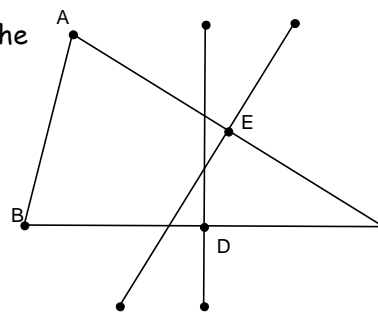
Find the slope of AE using $m = \frac{y_2 - y_1}{x_2 - x_1}$

Find the equation of AE using the slope and point E in a form of $y = mx + b$

2. Find the midpoint, D, of AC. Find the slope of BD.
Find the equation of BD using the slope and point D.
3. Use substitution to find the point of intersection of 2 medians from #1 and #2. This is the **centroid**.
or average all points

Circumcentre - Intersection of Perpendicular Bisectors

1. Find the midpoint, D, of BC.
2. Find the slope of BC. Take the negative reciprocal to get the slope of the perpendicular line.
3. Use perpendicular slope and the point D to find the equation of the perpendicular bisector passing through point D.
4. Find the midpoint, E, of AC.
5. Find the slope of AC. Take the negative reciprocal to get the slope of the perpendicular line.
6. Use perpendicular slope and the point E to find the equation of the perpendicular bisector passing through point E.
7. Use substitution to find the point of intersection of 2 perpendicular bisectors from #3 and #6. This is the **circumcentre**.

Orthocentre - Intersection of Altitudes

1. Find the slope of BC. Take the negative reciprocal to get the slope of the perpendicular line.
2. Use perpendicular slope and the point A to find the equation of an altitude passing through vertex A.
3. Find the slope of AC. Take the negative reciprocal to get the slope of the perpendicular line.
4. Use perpendicular slope and the point B to find the equation of an altitude passing through vertex B.
5. Use substitution to find the point of intersection of 2 altitudes from #2 and #4. This is the **orthocentre**.

